



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

h'd

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/779,707	02/18/2004	Michael Redecker	61610116US	8953

58027 7590 06/26/2007  
H.C. PARK & ASSOCIATES, PLC  
8500 LEESBURG PIKE  
SUITE 7500  
VIENNA, VA 22182

EXAMINER
----------

CANNING, ANTHONY J

ART UNIT	PAPER NUMBER
----------	--------------

2879

MAIL DATE	DELIVERY MODE
-----------	---------------

06/26/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/779,707

Applicant(s)

REDECKER ET AL.

Examiner

Anthony J. Canning

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 June 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,8,10-13,16,18,19 and 24 is/are pending in the application.
- 4a) Of the above claim(s) 24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,8,10-13,16,18 and 19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 20 June 2007 has been entered.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 8, 10-13 and 16, 18 and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Thompson et al. (WO 03/022008 A1).

As to claims 1 and 13, Thompson et al. discloses a display based on a photoluminescence quenching device (PQD), the display comprising: a substrate (page 13, line 9); an organic emitter layer (page 9, lines 4-6); a first electrode layer (page 13, lines 10-11), which is transparent and is arranged on a front side Of the emitter layer (page 3, lines 1-4); a second electrode layer (page 3, lines 3-4), which is disposed on the backside of the emitter layer (page 3, lines 1-3); and a hole

Art Unit: 2879

barrier layer (page 16, line 15) and an electron barrier layer including phenylenediamine derivatives (page 24, lines 3-5; see the second chemical formula shown on page 25; there is a benzene ring substituted with two nitrogen atoms, this is a derivative of phenylenediamine) where the hole barrier layer and the electron barrier layer are disposed between the emitter layer and one of the first electrode layer and second electrode layer (page 13, lines 5-14), wherein a highest occupied molecule orbital of the hole barrier layer is energetically lower than a highest occupied molecule orbital of the emitter layer (page 16, lines 22-23), and a lowest unoccupied molecule orbital of the electron barrier layer is energetically higher than a lowest unoccupied molecule orbital of the emitter layer (page 18, lines 1-6), wherein the lowest unoccupied molecule orbital of the emitter layer corresponds to the lowest unoccupied molecule orbital of the hole barrier layer (page 17, lines 8-10) and/or the highest occupied molecule orbital of the electron barrier layer corresponds to the highest occupied molecule orbital of the emitter layer (page 18, lines 28-30). The limitations stating whereby the first electrode layer forms a cathode and the second electrode forms an anode during re-emissive operation of the display, and the first electrode layer forms the anode and the second electrode forms a cathode during emissive operation of the display are directed to the method of operating the device and does not alter the structure of the device, consequently these limitations are not germane to the patentability of the device.

As to claims 8 and 16, Thompson et al. discloses the display of claims 1 and 13.

Thompson et al. further disclose that an energy difference between the highest occupied molecule orbital of the electron barrier layer and the lowest unoccupied molecule orbital of the electron barrier layer and an energy difference between the highest occupied molecule orbital of

the hole barrier layer and the lowest unoccupied molecule orbital of the hole barrier layer each amount to at least about 3.3 eV (page 19, lines 15-19).

As to claims 10 and 18, Thompson et al. discloses the display of claims 1 and 13. Thompson et al. further disclose that the hole barrier layer comprises at least one compound selected from a group consisting of oxadiazole derivatives, oxazole derivatives, triazole derivatives and quinoxaline derivatives and/or at least one compound selected from a group consisting of naphthalene carboxylic acid imide derivatives, naphthalene dicarboxylic acid dimide derivatives and wide-bandgap inorganic semiconductors (page 19, lines 15-28).

As to claims 11 and 19, Thompson et al. discloses the display of claims 10 and 18. Thompson et al. further disclose that the hole barrier layer is at least one of tin oxide, titanium oxide, zinc oxide, zirconium oxide, tantalum oxide, zinc sulphide and zinc selenide (page 3, lines 1-3).

As to claim 12, Thompson et al. discloses the display of claim 1. Thompson et al. further disclose that the hole barrier layer is disposed on a side of the emitter layer that faces towards the substrate and the electron barrier layer is disposed on a side of the emitter layer that faces away from the substrate (page 13, lines 10-11, with this configuration the hole blocking layer will be on the substrate side).

### ***Response to Arguments***

Applicant's arguments filed 20 June 2007 have been fully considered but they are not persuasive. Regarding the applicant's argument that Thompson fails to teach or suggest that the electron blocking layers including phenylenediamine derivatives the examiner respectfully

Art Unit: 2879

disagrees. The examiner notes that the second drawing of a chemical formula on page 25 is a benzene ring with two substituted nitrogen atoms, which makes the compound a phenylenediamine derivative.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony J. Canning whose telephone number is (571)-272-2486. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh D. Patel can be reached on (571)-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Anthony Canning *an*

*R. J. Canning*  
6/21/07